**Testimony of**
**Former Speaker of the House**
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**For**

**The United States Senate**
**Special Committee on Aging**

# The Future of Human Longevity
## *How Markets and Innovation can Transform Medicare*

**FINAL**
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Thank you Mr. Chairman, Mr. Breaux, and distinguished members of the Committee. I am delighted to have the opportunity to present testimony before this Committee on this very important issue.

Historically, there is a clear link between prosperity, health, and longevity. Wealth is required for investment in discovery, invention, and innovation, which creates a beneficial cycle of even greater prosperity and wealth. Without the scientific research of the last sixty years, we would most certainly have lower incomes, lower standards of living, and fewer choices. This cycle of prosperity increases labor-saving devices and reduces disabling conditions, enhances diet and nutrition, improves medical diagnosis and treatment, and promotes innovation.

In health and healthcare, it is particularly important to increase our public and private investment in research. If America invests in scientific knowledge—not just in direct medical research but also in physics, mathematics, chemistry, and engineering that are the underpinnings of so much of our advanced biological knowledge—we will extend life to an even greater degree, minimize suffering, and create a healthier and less medically expensive America.

We stand at an incredibly important moment in history. We are at the dawn of an explosion of knowledge that will change everything we know about science and, therefore, the human body. We will exponentially grow our knowledge of biology, physiology, and other health sciences in ways that will profoundly change the practice of medicine. The fields biotechnology and nanoscience did not exist 30 years ago. Driven by these two field and computing, I believe that the knowledge breakthroughs of the next twenty years will equal to that of the entire 20th century.

The importance of these fields cannot be overstated. It will affect almost every aspect of our lives, from the medicines we use, to the power of our computers, the energy supplies we require, to the food we eat, the cars we drive, the buildings we live in and the clothes we wear.

The word "nano" means one-billionth and nanoscale is the space between one atom and about four hundred atoms. It is the space in which quantum behavior begins to replace the Newtonian physics you and I understand. The same laws of physics literally do not apply in the nanoworld.

In this world of atoms and molecules, new tools and techniques are enabling scientists to create entirely new approaches to health. Nanotechnology allows us to "grow" materials by literally adding the right atoms and molecules to one another. The possibilities for adding years to human longevity from the confluence of biotechnology and nanotechnology are simply staggering compared to even today's latest medical innovations.

One example is that nanotechnology makes possible the ability to grow molecular "helpers." For instance, we may be able to develop anti-cancer helper molecules that penetrate human cells without damage and hunt cancer at its earliest single cell development. Imagine drinking your orange juice with three million molecular rotor rooters to clean clogged arteries without an operation.

Not only does nanotechnology open up our understanding of biology, but also biology teaches us about the nanoworld, because virtually all biological activities are at a molecular level. Thus, our growing capabilities in nano-tools and nanohelpers will dramatically expand our understanding of biology while our growing knowledge about molecular biology will expand our understanding of the nanoworld.

Dr. Sam Stupp is a world-class expert in using nanomaterials uses molecular design to create self-assembling systems at the very basic levels of assembling atoms and molecules. In effect, he is studying how nature assembles the very basic components of our body.

Since we can now work literally at the scale of single molecules coming together to form structures by design, we are beginning to learn how nature pieces together extraordinarily complex systems. As we learn to repeat the same process, we can begin to regenerate lost parts of our body.

Imagine that a blind person could regenerate their retina and literally have a new organic retina made of precisely the same material as their original retina. Imagine that a person in an accident who had lost the use of their arms and legs due to compression of the spinal cord could suddenly regenerate their spinal cord and have new use of their arms and legs as though the accident had never occurred. Imagine that someone with a bad heart could grow new, healthy heart tissue instead of having a heart transplant.

Far from science fiction Dr. Stupp believes all these breakthroughs could begin to occur by 2015.

Given these breakthroughs we are likely revolutionize the way we deal with a large number of problems involving injury, illness, and aging.

Great breakthroughs are occurring in large established companies as well as small startups. For example, The Nestlé TM Research Center in Switzerland is one of the largest and most sophisticated private laboratories of its kind in the world. The scientists at Nestlé TM have a very wide, and at times somewhat different, perspective on the importance and impact of nutrition on health. In addition to their interest in normal body cells, they also have a keen interest in the 70% of the cells in your body that are not "you." Our bodies are hosts for billions of tiny beneficial bacteria that live

in our small and large intestines. These organisms, referred to as probiotic organisms, help us stay healthy by, not only altering some metabolic processes in the intestine for the better, but also by competitively inhibiting attempts at colonization of the intestine by harmful bacteria.

Consequently, these probiotics act as a protective barrier for our bodies. The food you eat influences the numbers of these beneficial probiotic bacteria in our intestine in a way we are beginning to understand. As a result, they have developed a yogurt that delivers these beneficial bacteria to the intestine in a way that is both inexpensive and practicable. Once in the intestine, the probiotic bacteria can then actively play out their beneficial role. The implications for health management and disease prevention are amazing.

There are other stunning breakthroughs now occurring in biology. Breakthroughs, including the now completed Human Genome Project, will teach us more about the human body in the next twenty years than our total knowledge in history to this point. Now that we have finished documenting human DNA, Dr. Crick, the Nobel Prize-winning, co-discoverer of DNA, thinks it will take us a century to understand and apply all the potential breakthroughs this new knowledge makes possible. It is conceivable that in the not-so-distant future it may be possible to design an exact drug concoction specifically for you and your condition based on your genetic code.

The development of new technologies will increase our understanding of the human brain in ways previously unimaginable. Perhaps ironically, these will be largely a function of physics and mathematics because we are discovering that the brain may be

one of the most complex aspects of the entire universe. From Alzheimer's to Parkinson's to schizophrenia, there will be virtually no aspect of our understanding of the human brain and human nervous system that cannot be transformed in the next two decades.

Yet, the greatest obstacle to making today's technology—much less, tomorrow's technology—accessible to America's seniors is Medicare. There is much to be done to improve the quality of life and longevity of Americans. And I believe the effort to strengthen and improve Medicare has the potential to harness market forces and make available past medical discoveries as well as future medical discoveries. The demographic, social, and technological history that follows will set the stage for transforming Medicare—based on market competition and increased choices for seniors. Correctly designed, Medicare can play a positive role by enhancing longevity and improving the quality of life for older Americans.

Fifty-seven years ago something began to happen every 8 seconds -- the baby boomers were being born. In the very near future, they will begin to retire at a similarly rapid rate.

It is a testament to American innovation and values that we are living longer. Our ability to extend life is no doubt a great success but one that presents to us, and to this Committee in particular, some enormous challenges. We must face the reality that 76 million baby boomers are nearing retirement and consider how their retirement will affect the future of Medicare and Social Security.

The pattern of thought when confronted with such emerging demographic realities has historically been to set up command and control structures to limit access and to restrict choice in an attempt to control costs. These methods have routinely failed us in the past, and there is no reason to believe that they can succeed in the future. And if attempted will, I believe, lead to higher costs, severe cuts in benefits, and dramatically lower the quality of care which will lead some to suggest raising taxes to prop up a fundamentally broken system. The result will be an expensive and inefficient program that will be incapable of delivering quality care at an affordable price.

As a fair warning to all elected officials, baby boomers are the least likely group to accept being trapped into a bureaucratic, red-tape-ridden, regulatory, third-party-payer system with fewer choices, lower quality, and increasing costs.

What boomers already understand is that the natural pattern of the 21st Century is to have more choices and greater quality at lower cost precisely because these choices have been their experience over their entire lifetimes. Thanks to modern technology and science in an entrepreneurial market-oriented system, they have come to expect better products and services at the lowest possible price. In fact, they know that as quality improves, prices often decrease. This is true of many of the products and services they use daily including mobile phones, computers, online travel services, automatic teller machines (ATM), and even self-service gasoline pumps.

As they age they will begin to use the healthcare system more and more. What they will expect is what they have always received – high quality at low costs. What the members of this Committee should understand is that with their background it is

impossible to talk to baby boomers about rationing, about scarcity, about limited choices or ask them to accept skyrocketing costs. Implementing such reforms, in my view, will guarantee that the system will fail and that failure will cause enormous pain.

I believe that to positively reshape government's role to affect best possible outcomes in health, we must first be honest about, and accept how obsolete the current model is, and acknowledge that what is required is to rethink Medicare from the ground up. To get agreement on this point, let me provide some historical context.

Medicare was created in 1965. Since then:

- **In 1967, the first liver transplant was performed.**
- **In 1968, the first heart transplant.**
- **12 years after Medicare was created, the MRI was invented.**
- **The cellular phone and the Walkman came along in 1979.**
- **ATM's, bar code scanners, VCRs, fax machines, and personal computers were invented.**
- **In 1980, the Hepatitis B vaccine was invented.**
- **17 years after Medicare, the first person received an artificial heart.**
- **The Windows program was released in 1985.**
- **25 years after Medicare, the World Wide Web protocol was created.**
- **Lipitor, a drug to control cholesterol, became available in 1997.**
- **Actonel, a drug to treat osteoporosis, in 1998.**
- **Celebrex for arthritis in 1999.**
- **Reminyl for Alzheimer's patients in 2001.**
- **Diovan for high blood pressure was made available just last year.**

Today's Medicare, essentially the same program since 1965 based upon 1960's science, medicine, and technology, is simply outdated. Moreover, its command and control

structure is exactly what we would advise every other country in the world against doing.

Remember in 1965, the average life expectancy was 70.2 years of age. Today it is 77.2 and is expected increase to 78.5 years of age by 2010. Bill Novelli, President and CEO of AARP said, "Baby boomers want a second start, not a retirement." Baby boomers will spend more years in retirement than any other generation, so in thinking about longevity for the baby boomers and their children, we should recognize that boomers have a very different idea about retirement than their parents did. They will want to make their lives in retirement even more interesting and productive. They are very likely to be more active and as they are accustomed, they will want to be in control. They will not sit passively while others make decisions about their lives. Baby boomers are the most market-oriented and savvy generation to reach retirement in American history. They understand investing, modern technology, and communication. Government should get ahead of the wave by adapting, in parallel, to the realities of this modern and demanding generation.

So can we transform Medicare? Historically, I am an optimist. I believe we have a window of opportunity to provide all our seniors with the choices and quality they deserve and indeed will demand at the lowest possible cost. I came here today because I believe that we can transform Medicare into the 21st Century model that I have described.

In order to significantly transform Medicare, we must constantly strive for innovative entrepreneurship. I want to share with you an outline of how markets and innovation

could truly saves lives and save money by applying four major drivers of change to create a 21st Century Medicare or "BetterCare," if you will, because our goal must be to provide the best possible care not only for the baby boomers but for each subsequent generation.

- **First** -- Focusing on Patient Safety, which will provide the moral authority for transforming the system.
- **Second** -- Building an IT system characterized by increased accuracy, speed, efficiency, and ability to focus on outcomes with genuine privacy.
- **Third** -- Developing a culture of quality in the Deming and Six Sigma models.
- **Fourth** -- Insisting that the individual take personal responsibility for his or her own health.

A solution's transformational value in any of these four areas should be measured by its ability to achieve one of the following results:

1. Better health or healthcare outcomes at lower cost.
2. The same health or healthcare outcomes at lower cost.
3. Better health or healthcare outcomes at the same cost.
4. Life saving measures at any cost as an American value.

I want to take a moment and share with you what I think are the key principles of a 21st Century System of Health and Healthcare that should be applied to Medicare.

They are:

Centered on the Individual

Values Driven

Knowledge Intense

Innovation Rich

Prevention Focused

Electronically Based

Market Mediated

Moreover, they should:

Increase Choice

Improve Quality of Care & Quality of Life and

Drive Overall Costs Down

None of the five life-changing drugs that I previously mentioned as examples were available before 1997. In the modern medical world, it is no longer acceptable to separate healthcare from modern pharmaceuticals. Drugs have become an indispensable part of modern healthcare and central to health, so much so that as a vital first step in transforming the system from its 1965 roots, Congress should allow seniors to get the drugs they need by adding a prescription drug benefit to Medicare. However, in doing that, it should also use its market power to demand increased patient safety and administrative efficiency by implementing two solutions that will result in better quality at lower cost -- electronic prescriptions and an electronic Internet-based drug-purchasing system. An Internet-based, market-oriented, drug-purchasing system would give seniors the widest range of choices with the most information at the lowest cost to them and to the government.

As Congress considers a Medicare reform bill, every member should keep in mind the world in which I have described and indeed the world we all live in -- where consumer-based systems handling millions of transactions daily are in real-time, available 24/7 and are amazingly accurate. So accurate, in fact, that many consumers no longer get a receipt for their electronic transactions as in the case of gasoline purchases. Consumers are so confident that a gas pump anywhere in the country (except New Jersey and Oregon) will be so fast that they do not even think about the two seconds it takes for the credit card to turn the pump on, so accurate that it is not worth reconciling the transaction with their credit card or bank statement, and so safe that they are willing to have their personal financial information travel through an electronic network to take money from their personal account. This is a gas pump.

But then, quite literally, just across the street, we meet our healthcare system where sick patients are routinely expected to fill out multiple forms with the same information that they have been asked to fill out numerous times before. A healthcare system in which the Institute of Medicine reports that we lose at least 44,000 Americans every year due to medical errors, the equivalent of a New York to Washington airline shuttle full of passengers crashing every day killing everyone on board. If we were losing a shuttle every day, we would be frantic because we take the lives of airline passengers very seriously. Our current healthcare system tolerates 2 million hospital-induced illnesses a year. That is, if you spend more than four days in a hospital the chances are even money that the hospital will give you a disease for which the hospital will then charge you to cure. In a quality system (driver of change number three) we would focus on reducing those illnesses by at least 90%, thus saving 1.8 million people from getting a

secondary illness. That alone would save an enormous amount of money not to mention suffering and death.

Moreover, in the healthcare system today, doctors continue to write billions of handwritten prescriptions every year of which more than 150 million require a call-back from the pharmacist to the doctor for three basic reasons: the pharmacist cannot read the writing, the drug is not compatible with another drug the patient is taking, or the pharmacist wants to substitute a drug so the patient's insurance will cover it. That is an enormous waste of time and resources for what is a correctable problem. But more importantly, written prescriptions kill people because with billions of written paper prescriptions, errors are going to happen. Yet, while nearly all physicians' offices have computers and 75% of doctors own a hand-held computing device and even with the technology readily available, according to a 2002 Harris Survey only 16% of office-based physicians are using electronic prescribing tools and only 2% to 3% of the more than 3 billion prescriptions dispensed annually system-wide are currently processed in an electronic format.

The evidence that written prescriptions kill people is overwhelming.

Medication errors contribute to more than 7,000 deaths annually, exceeding those resulting from workplace injuries, yet we have no OSHA-like response.

According to a report by the Institute for Safe Medication Practices, medication errors could be cut by 55% if physicians switched to electronic prescriptions. But this is more than a theory, a computerized physician order entry system at the Metropolitan Hospital

Center in New York helped reduce medication errors by more than 40%, while incorrect drug orders fell by 45%, and illegible orders all but disappeared.

Following the installation of a computer prescribing module at Oregon Health and Science University Hospital emergency department, prescriptions were three times less likely to include medical errors and five times less likely to require pharmacist clarification than handwritten prescriptions.

A survey of 400 physicians found that 76% said electronic-prescribing technology enabled them to deliver better quality care.

Electronic prescriptions are proven to increase efficiency.

A study by Tufts Health Plan found that electronic prescribing saved two hours a day per physician. In addition, the technology helped doctors improve patient safety in several ways: it made prescriptions more legible, it let them know of potential drug interactions, and it let doctors know whether patients had been refilling their prescriptions on time.

A study by the University of Virginia found that e-prescribing devices cut prescription refill times to an average of 69 seconds, down from the 15 minutes that nurses had to wait on hold before their orders were taken.

Within three months of implementing a new e-prescribing platform and improved training procedures, inbound pharmacy calls fell 36% and outbound calls to manage

renewals fell 50%, according to a recent study on the impact of electronic prescribing technology. Financial savings equated to approximately $3,000 per physician per year.

Temple University Health System Primary Care Physicians saved 10% on malpractice insurance premiums after installing an electronic prescribing system.

Let me say for the same reasons I just outlined, and because building a real-time, accurate, efficient health IT system is the second driver of change, we should move to a secure medical records system and encourage all digital environment hospitals such as the Indiana Heart Hospital recently featured on the Today Show. These systems allow doctors to access with your permission and without your permission in an emergency, your complete health history including any allergies you might have and the medications that you are currently taking.

We can no longer accept suffering and death because of prescription errors or any other preventable errors. As I indicated, patient safety must be the first driver of change. We should set the same standard of safety for the patient as we do for the passenger on an airplane. From an economic standpoint, we should not tolerate the current inefficiencies in the Medicare system but instead build a culture of quality, which is the third driver of change. Congress should move to mandate electronic prescriptions by 2005. A good first step after passing a Medicare Drug Benefit would be to not reimburse handwritten prescriptions. That would save both lives and money.

In addition to incentivizing e-prescribing, Congress should create a prescription drug purchasing system that optimizes the beneficiary's choice of drugs while minimizing the

cost and maintaining a fair market price that will not stifle future research and development of new drugs. This system should be based on the hallmark of all systems that deliver value -- the power of the market. With the advent of the Internet, competition has never been as fair because information has never been so transparent. I propose that CMS create an electronic prescription-drug comparison system for seniors that is modeled after some of the most empowering technology that consumers have ever seen.

The model I am describing is not unfamiliar to any of you. I suspect that all of you use an automatic teller machine or have used a self-service gas pump that accepts your credit card, or you might use one of the online travel services such as Travelocity, Expedia, or Orbitz. If so, you will instantly understand this model. But first we need to dispel the notion that Americans are not able to learn new technologies that help them to manage their lives, because the opposite is true.

> 64% of consumers as of last year have an ATM card resulting in 40 billion transactions a year globally.
>
> 94% of consumers that have begun the car shopping process have conducted online research while only 67% have visited a dealership in person.

All the evidence from Internet-based price comparison tools like Travelocity and Expedia indicate that buyers get lower prices by shopping online. Various studies indicate average cost-savings range from 9% to 16% on books (Jules Kaplan, University of Colorado), 28% on prescription drugs (Jules Kaplan, University of Colorado) 10% or

higher on airline tickets (Thomas Weisel Partners), and 40% on automobile insurance (Daniel Finnegan, Quality Planning Corporation). Buyers' access to Web-based price comparisons has been responsible for at least ¾ of the 20% industry-wide reduction in the cost of life insurance policies. Finally, while there is generally the absence of a binary (buyer-seller) healthcare market in America, a recent study of cosmetic surgery, which is one of the few areas in healthcare with a binary market, indicates that markets do work. The price of cosmetic surgery rose 16% since 1992 compared with a 47% increase in the price of medical services and a 26% increase in the Consumer Price index in the same time period (NCPA issue brief 437, http://www.ncpa.org/pub/ba/ba437/).

The same electronic approach can help individuals manage their health if they have a chronic disease like diabetes by giving them the latest information to keep them as healthy as possible. No doctor or nurse can manage a person with diabetes successfully. The individuals must do it for themselves every day, and if they do, they can dramatically improve their chances of not suffering nerve damage, blindness, lower-limb amputation or kidney loss. Not only would that save suffering but it also would save millions of Medicare dollars currently spent on diabetic illnesses. When we passed welfare reform, we insisted that people go to work or go to school. So now we should feel comfortable insisting that every American, rich or poor, take control of their own health and their own healthcare dollars, which is the fourth driver of change, but we have to give them access to the right information.

How do we propose to accomplish this?

Our goal is to have an online system that would allow doctors and senior citizens to have access to the full range of drugs and prices that would apply to their situation. The government would then subsidize 90% to 100% of the least expensive drug and would apply the same dollar value to any of the more expensive drugs. The consumer who chooses a more expensive drug would pay the difference. If you had a unique need, the doctor could prescribe the one medication you need, and the government would then subsidize it.

Assume you went to the doctor and the doctor gave you two prescriptions. One prescription was for a unique one-of-a-kind drug that has no real alternative for your medical condition. The other prescription was for a drug that exists in a class (the base of tiering and formularies in the current PBM model). In the first case you get exactly the one-of-a-kind drug the doctor prescribed, and the cost of the drug is subsidized to the degree the government (Medicare) or the employer has agreed upon. So far, nothing is dramatically different from the current system although the price pressure even on a unique drug would be much greater in a "Travelocity-based system" than it is in the current system. (Outside of America, reference pricing in Germany, Australia, etc. indicates that the price pressure once you are in a class of drugs is inexorably and rapidly downward toward the least expensive.)

For the second drug the individual would use the electronic prescription-drug comparison system on their computer, at a kiosk in their drug store, or by using an 800 number where they would learn that there are seven drugs in this group, including medically appropriate over-the-counter drugs. The government would pay either 90% or 100% of the least expensive drug. For ease, we will say that the government pays

90% of the least expensive drug. In this case, the least expensive drug is $50 so the government is going to pay $45, no matter what drug you choose. If the drug you want for your own particular personal reasons is $60, the government is still paying 90% of the lowest-priced drug, $45. So, if the consumer purchases the $60 drug they will pay $15. But the key is that they have the information and they have a choice. Choice creates competition and competition drives down price.

This system could also be used for employer-sponsored insurance with your employer paying a percent of the lowest-price drug. There is an open formulary and again the choice is up to the individual.

Imagine having the National Institute of Health and Food and Drug Administration develop an outcomes-based, data-rich system with a nightly tracking of real prices paid. This is doable according to Walter Hoff of NDC Health, which handles 10 million drug transactions a day. With this model you are getting a market-centered science-based system of guaranteeing access to the lowest-cost drug while creating downward market pressure.

Under this new system, seniors would be better off than they are now because the government would pick up virtually all of their least expensive choice. If they wanted to spend more they could, but it would be their choice and their money, all of which is consistent with the principles of a free-market society. In this model there are no bureaucratic controls, no drug company is having its product stolen by confiscatory pricing, and people have access to the medicine they need. However, in this model the

price pressure is relentlessly downward, and the drug company has to decide what price it needs to charge to be competitive.

A cardiologist in Chicago has already created a similar system called Rxaminer. Rxaminer allows patients to go online, find lower-priced equivalents for prescribed drugs, and then take that information to their doctors to discuss whether the lower-priced options are feasible. According to Rxaminer, the usual result is a 20% to 40% cost savings. This can be even greater if the patient then goes to various online drugstore Web sites to compare prices for the selected lower-priced option, which Rxaminer says can reduce prices by another 10%. As an example of the price saving opportunities that exist, a survey posted online by the State of Arizona shows an amazing price variation within that State for the very same prescription drugwith some of these variations as high as 700% (www.attorneygeneral.state.az.us).

This system would make transparent a very complicated system and specifically affect the current practices of pharmacy benefit managers (PBM) and pharmaceutical manufacturers. In essence, it would be the end of the rebate schemes, the end of "AWP minus," the end to the third-party-decision mess that currently makes it impossible to know what drugs truly cost. For example,

1. It would transition PBMs from being managers to truly only being pharmacy benefit administrators.

2. The drug companies would have to list true prices and there would be no rebates. The PBM would make its money on transaction fees rather than on rebates.

3. The doctor and patient would be making the decision based on real information about price and efficacy rather than on formulary tiering.

4. There would be an open formulary with the government financing the least expensive, unless the doctor designates a unique drug rather than a negotiated formulary with rebates.

In addition to the cost-lowering benefits of true competition, the combination of electronic prescribing and an electronic system of drug comparison would have additional advantages:

With electronic prescribing and electronic comparisons and purchasing we could begin to develop outcomes-based data with massive statistical data bases in the near future. Companies like Anceta are actually working on this for medical groups like Mayo.

Even within the model of making available one-of-a-kind drugs, we could track all doctors' prescriptions so we could identify which doctors were practicing unnecessarily expensive medicine as opposed to doctors who were practicing best outcomes, not lowest cost.

The key to making a prescription-drug benefit work is an educated doctor and an educated patient who possess the knowledge and the incentives to make outcome-based choices. This is the key to creating a better, healthier, more financially stable system.

I think this is exactly the right hearing and comes at exactly the right time. An improved health status and an increased longevity of older Americans depend greatly on what the Congress does to incorporate new and emerging technologies, especially prescription drugs, into the Medicare program. Congress has the immediate opportunity to skip past all of the failed techniques of the 1980's and 1990's and develop a 21st Century Medicare Drug Benefit. We can learn from the mistakes of managed care, which never managed care at all and also failed at managing costs, and we can learn from the mistakes of the highly convoluted rebate-ridden and totally-impossible-to-understand current pharmacy-benefit management system. Armed with that learning and with the incredible breakthroughs and technologies inherent in today's age of transformation, we can create a 21st Century Medicare System of improved health status, lower disability rates, better quality, lower cost, and increased longevity for all Americans.

Thank you.